CLAIMS

What is claimed is:

1. An apparatus for determining a level of a refrigerant fluid in the cooling system of a vehicle comprising:

a first temperature measuring device adapted to be coupled to a first region of a conduit containing the refrigerant fluid;

a second temperature measuring device adapted to be coupled to a second region of the conduit; and

a data processing system coupled to outputs of the first and second measuring devices and operative to determine a temperature difference between the first and second conduit regions from the outputs of the first and second temperature measuring devices and to correlate the temperature difference to the level of refrigerant fluid.

2. The apparatus of claim 1, wherein the first temperature measuring device is adapted to be coupled to an input conduit of an evaporator of the cooling system and wherein the second temperature measuring device is adapted to be coupled to an output conduit of the evaporator of the cooling system.

3. The apparatus of claim 1, wherein the data processing system uses a table of pre-selected data that includes a plurality of temperature differences that correspond to a plurality of levels of refrigerant fluid.

4. The apparatus of claim 1, wherein the data processing system further comprises a monitor for displaying the level of refrigerant.

5. The apparatus of claim 1, wherein the first and second temperature measuring devices are thermocouple probes.

6. The apparatus of claim 1, further comprising an indicating device for informing the user when the level of refrigerant fluid in the cooling system is below a pre-selected charge level.

7. A method for determining a level of refrigerant fluid in a cooling system of a vehicle comprising:

measuring a first temperature at a first region of a conduit containing the refrigerant;

measuring a second temperature at a second region of the conduit;

determining a temperature difference between the first and second region; and

determining the level of refrigerant fluid by correlating the measured temperature difference with pre-selected data.

8. The method of claim 7, wherein the first region of the conduit is located at an inlet side of an evaporator of the cooling system and the second region of the conduit is located at an outlet side of the evaporator.

9. The method of claim 7, wherein the pre-selected data includes a plurality of temperature differences that correspond to a plurality of levels of refrigerant fluid.

10. The method of claim 7, wherein a data processing system determines the temperature difference and the level of refrigerant fluid.

11. The method of claim 10, wherein the data processing system includes a monitor for displaying the level of refrigerant.

12. The method of claim 7, further comprising informing the user when the level of refrigerant fluid in the cooling system is below a pre-selected charge level.